2: Durham B-5 (ca. 1910)1928 EG1 Albania EG1

visible mark has a strong effect on primitive and childish minds—witness national flags and school and college colours. The missionizing "popes" of the Orthodox Church had every reason to denounce a practice which thus "sealed" part of the population and made it turn a deaf ear to the attractions of Byzantium.

To this day the object of the Orthodox is to wipe all that belongs to Rome from the peninsula. I found the bitterest dislike, even among the educated classes; and among the peasants neither side would admit that the other was Christian. In early days the struggle must have been even cruder than to-day.

3. Tattooing in Albania

We will trace these symbols farther south. In North Albania I noticed that every Catholic woman among the five large tribes (Kastrati, Shkreli, Hotí, Gruda, and Klementi) wore, if not too poor, a large silver filigree crescent and star stitched to the crown of her flat cap; or a similar design was embroidered and the "star" then larger. Asked why they wore a Turkish symbol, they crossed themselves and denied the charge indignantly, saying: "We wear it because we always do. It is not Turkish. We are good Catholics." They declared also it was "very old"; and were quite correct. For the sun and moon symbol, as we have seen, was long pre-Turkish in the Balkans. I next found that the bulk of these tribes-folk, both men and women, are tattooed on the back of the hand, the forearm, or the breast (seldom on all) with a cross; but never a plain cross. It has a crescent above and below it; or the arms terminate in small circles, as do those on Byzantine coins; or some in circles and some in crescents; or the cross is in the "sun-wheel" form. None of these people at all objected to showing the tattoos. I at once recognized in a simplified form the elements of the Bosnian designs. Most people said they did it because they were Catholics. Anxious to give a reason, one man said it was to ensure you Christian burial if you died abroad.

When I asked the Albanian tribesmen what was the meaning of the circle and crescent on the cross-arms, they said at once it was "Dielli"—the sun; and "Hana"—the moon. The cross was to show you were a Christian. What were the sun and moon for? The only reply was "per bukur" (for beauty). Often they laughed and gave none. Mgr. Ernesto Cozzy, then priest of Rechi and later Apostolic Delegate at Scutari, a Tyrolese whose knowledge of the mountain people was the result of years of sympathetic study, told me: "They have a number of curious pagan beliefs which they will not tell me. I have found that

[Text continues on p. 123]

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FIG. 7.—ALBANIAN TATTOO PATTERNS

1–7. Common tattoos of Catholic tribesmen. 8 and 9. Two curious tattoos on Catholic Scutarenes. 10 and 13. Moslem tattoos common in mountains and in Scutari. 11 and 12. Patterns common on Moslem houses.

2: Durham B-5 (ca. 1910)1928 EG1 Albania EG1

they believe in two powers, of Light and Darkness, which are in conflict—Good and Evil. These tattoos are in some way connected with it. So is the Serpent, which they sometimes tattoo and also draw on walls."

I never saw a tattooed snake, but saw some carved on tombs. Mgr. Cozzy, whose work as priest and doctor was beyond all praise, died in 1926—a loss not only to the tribesmen but to science, for his pile of MS. notes on tribal customs was destroyed in the war years, and his probably unrivalled knowledge died with him.

This belief in the powers of Light and Darkness takes us back to Mithraism and Manichæism. That all the tribes believe in this struggle I first learnt in Nikaj, when the thunder crashed on the mountains and my Nikaj guide cried: "Drangoni is fighting Kulshedra." Kulshedra is the evil female power who strives to destroy mankind with storms and floods. Drangoni is the good male power which hurls thunder and lightning and drives her back. As we have seen, the female, according to Mani, possessed but few particles of light and was an instrument of destruction.

The Manichæan belief is shown by Titus Bostrensis Episcopus, who, in *Adversos Manichæos*, tells of a Manichee "asserting strongly and wickedly alleging that the fruits of the earth are created by the sun, which he admires and honours exceedingly. He says that the overwhelming rainstorms are the defence of matter" (i.e. the wicked substance) "and work passionately against the powers of Good" (*v.* Migne, *Series Græca*, vol. xviii, p. 1195). The rain is the sweat of the evil power striving to destroy the good.

The belief in Kulshedra and Drangoni is found all through Northern and Central Albania. I do not know its southern limit. Drangoni can be a man or a male animal. If a boy is born with a feather under his armpit he will be a Drangoni; but his mother must tell no one or he will die at once. This accounts for the extremely small number of Drangonis who survive. I was told that St. George was a Drangoni, which may be the reason of his great popularity in the Balkans.

The Serb tradition that when it thunders and lightens St. Ilija is driving off the storm fiends is possibly another form of the same tale —Drangoni here taking the form of St. Ilija.

Thus deep in the mind of the peasant there lurks still a remnant of the Mithraic and Manichæan beliefs.

A point of interest about the tattoo patterns is that part of the Gruda tribe, the bulk of the Hoti, and all the Shkreli (*v.* Tribes) have a clear tradition of having migrated from places farther north to escape from the Turks. They insist that they were Catholic at the time of the ancestral migration, and may, therefore, descend from one of the northern districts of tattooed aborigines which early came under

2: Durham B-5 (ca. 1910)1928 EG1 Albania EG1

304 [173] the influence of the Roman missionaries. Tattooing is not confined to tribes tracing northern origin, but is more marked among them.

Among the Pulati and Dukagini, who trace a different origin, tattooing is common but not universal, and takes the form often of

[764]

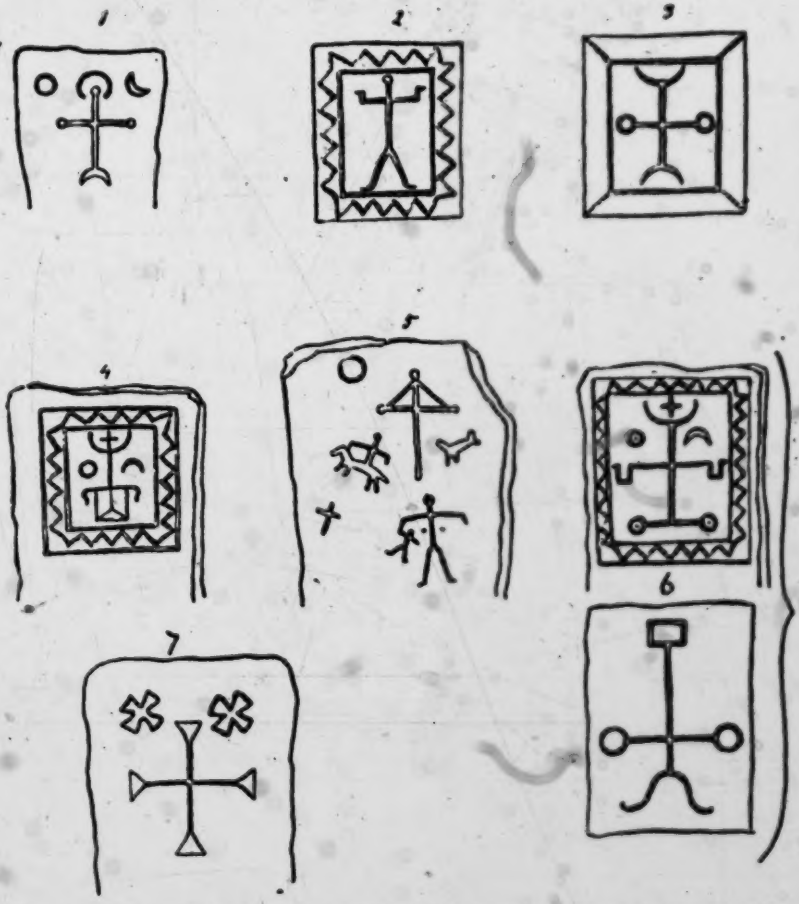

FIG. 8.—MODERN GRAVESTONES IN ROMAN CATHOLIC GRAVEYARD, DUSHMANI, NORTHERN ALBANIA

(Showing variants of Cross, Crescent, and Sun. All recent)

one tiny cross. I did not see a sun or moon tattoo, but found the sun and moon extremely common carved on graves, furniture, over doors, etc. Here the moon is carved as a semicircle with rays, just as shown in the Bosnian tattoos.

beliefs and rites one can hardly doubt. As is well known, the gods of the heathens became the devils of the Christians.

776 777 Marko was greatly afraid of Beelzebub and mentioned him with a curse and a whisper. Belial and Beelzebub were supposed to be the most active. The tribesman followed the advice of his priest and put [304] a cross on his house and tattooed himself with a cross, but he further protected himself with more ancient signs; he planted the skulls of horses, goats, and oxen on poles round his house and fields. Some houses had rows of skulls. I wondered whether, in old days, human ones had figured there, too.

The horse-skull was most valued not only in Albania, but also in Bosnia and in Montenegro. Where civilization has penetrated the horse-skull was often replaced by a twisted petroleum tin whitewashed. Short-sighted devils, seeing it from a distance, could easily have mistaken it for the real thing and fought shy.

[793] Priests are but human. I found one Catholic priest had a whole array of horse- and other skulls round his beehives. He laughed it off when I remarked on it, and added that bees were very liable to disease. He evidently wanted to be on the safe side.

754 I often found in the mountains a distinct fear of being drawn, or "written," as they always called it. At Vraka I asked if I might draw the interior of a house. The woman was doubtful. She at last said I was not to "write" her or her children, and, to make sure, she drove the children out of the house. In Luria I was told not to "write" anyone or any house. At Lohja was a wonderful old man, who was reputed to be 110, who boasted that he had sinned but twice in his life—and then it was not his fault. Men in plenty he had killed, but never dishonourably or for money. The company suggested that I should "write" him. Much flattered, the old man sat still for a while, but when everyone shouted that the sketch was exactly like him, he became greatly alarmed, and earnestly begged me never to destroy what I had "written" about him, for at the moment it was torn he would drop down dead. I preserved the sketch, and five years later found him still going strong.

754 787 At Seltzi, in the Klimenti tribe, I was told the best way to detect a shtriga is to keep the bones of the pig you ate on the last day of Carnival. All through the Balkans the pig, abhorred by Turk and Jew, is a sign of Christianity. On Easter Day you make a cross with the pig's bones and tie it on the church door when the church is full of people. If any shtrigas are in the church they cannot get out except carried on the shoulders of the man who made the cross. They run 754 wildly round and round and can be caught.

681 There was, so far as I could learn, no traditional punishment for a

2: Durham B-5 (ca. 1910)1928 EG1 Albania EG1
Yugoslavia EF1
Montenegrins EF5

place has been given to the Jugoslavs, has doubtless been destroyed. A 531
Here beyond doubt the Turkish "star" is the sun. The crescents at 342
the ray-tips suggest that many of the "twigs" of the Bosnian tattoos are really tiny crescents at the end of rays, and have in many cases been evolved into crosses.

We have examined tattooing and sun-symbols among the Catholics. Y
The Moslems of Bosnia, according to Truhelka, occasionally tattoo. [304]
I saw no examples myself.

But among the Moslems of North Albania tattooing is common. A 304
In the entirely Moslem districts of Hasi, Vuthaj, Arnji, and by the 531
Moslems of Luria it was not easy to make any investigation, and impossible to ask questions. The population received me kindly as the only female foreigner who had ever visited them. But the "giaour" was suspected of being the forerunner of foreign annexation, and any questions regarding beliefs would have led to difficulties and probably closed the route to me. I could only observe and make secret notes. I saw many tattooed Moslems in these districts but never a tattooed crescent and star. All, both here and at Scutari, were marked with a triangle, and sometimes with an Arabic inscription. Or with a double triangle—which forms a star and is, I suppose, the substitute for the rayed sun. This same triangle or double triangle (Fig. 7, Nos. 10–13) A
is commonly painted on Moslem houses both up-country and in Scutari, [342
where it sometimes contains a crescent within it. Oddly enough, the 531]
only time I saw the crescent and rayed sun (or star) without a cross as a tattoo it was on the hand of an old Catholic in Scutari (Fig. 12, No. 9).

But though the up-country Moslem does not tattoo the sun and A 764
crescent (probably because the Christians tattoo them along with the cross), he cuts them out of wood—a circle for the sun and a sickle-shaped piece for the moon—and plants them at head and foot of his graves. Or the circle with a crescent below is cut in one piece and used as headpost (Fig. 9, No. 5). The Moslem Albanian, in fact, on quitting Christianity has rejected the cross but retained the ancient religious symbols of his pre-Christian ancestors—the sun and moon. He has not, except in the towns which were under Turkish influence, adopted the well-known Turkish gravestone with turban or fez upon it.

Emerging from these Moslem tribes I was amused to find that at A 531
Prizren, which was then by large majority Albanian, the sun and moon 346
figured over the door of the Serbian Orthodox Church.

In Montenegro, traces of sun and moon can be found. The arms of M 764
the solid stone crosses usual in the graveyards end as a rule in hemi- 531
spheres. Limestone is hard to tackle and no moon appears. When, however, a cross is carved in relief on a slab the moon appears as a

[Text continues on p. 131

8:Coon E-5 (1929-30;46-48)1950 EG1 Albania EG1
Highland Ghegs

CRADLING

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THE EVIDENCE ACCUMULATES

I WROTE, in 1939, "There has been much discussion upon the subject of occipital flattening, both in Albania and in Asia Minor; there are two definite schools, one which believes that it is natural and racially determined, the other that it is a form of artificial deformation caused by cradling. My own position lies between these two extremes; occipital flattening is without doubt a phenomenon associated with the entire mechanical orientation of the cranium in the Dinaric race, and especially with the position of the foramen magnum to the rear of that usual in most races. As such, it is undeniably inherited.

"At the same time, the use of the Albanian cradle, in which the shoulders are bound but the head is not, may in some instances have caused an intensification of this flattening, since the heads of some living Albanians are unquestionably deformed. However, since cradling practices are regionally uniform in Albania, the geographical distribution of this character is wholly racial in pattern."[1]

I also promised in a footnote: "A detailed study of this question will be published in the author's "The Physical Anthropology of Northern Albania," the provisional title of the present monograph. Since then evidence has been accumulating that "some instances" should be changed to "most instances." Father Ewing found that Lebanese children born in Brooklyn show much less flattening than their parents, and 2 Harvard graduate students, Mr. David de Harport and Mr. William Laughlin, working under my direction, found the same thing among Tosks in Greater Boston.[2]

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In the course of the present monograph 6 pieces of evidence have appeared in other contexts. In chapter 10, on "The Mountain Gheg Phenotype," on page 62[2] and table 4,[3] we saw that the sigma ratios for head length, head breadth, and the cephalic index are abnormally high, both as a total and within tribes, and this applies especially to the ceph-

[1] [see cat. 116, p. 906 -- Analyst]

[1] Coon, 1939, p. 600.

[2] [see cat. 116, pp. 62a-62e -- Analyst]

[3] [see cat. 116, pp. 54f-54m -- Analyst]

8:Coon E-5 (1929-30;46-48)1950 EG1 Albania EG1
Highland Ghegs

304 854 The literature of the entire subject of cranial deformation has been ably covered by Dingwall,[3] who quotes some Albanian instances in which intentional molding was observed. Miss Hasluck confirms this for Macedonia, and has a paper on the subject for Albania in preparation.[4] It is hard to say how much of the cranial deformation in Albania is intentional, and how much the unconscious result of cradling.

THE TECHNIQUE OF CRADLING

854 Albanian mothers, like mothers in other countries, are often faced with a "baby-sitter" problem. A young woman wants to go out in the fields to work, or to the market for shopping, and she cannot leave her baby alone. Besides, if she is to be gone for any length of time she must have her baby with her to nurse it. When she is on the march she cannot afford to immobilize her hands by carrying it in her arms. Walking-time is spinning-time in Albania. These are some of the practical reasons for a cradle. Other reasons are emotional and historical. The cradle is a part of Albanian culture, like the hearth and the loom—one of the material symbols of the activities of men, women, and children in families. Our grandfathers were cradled, and our grandfathers were wise and generous men, and brave warriors.

After he has been washed, blessed, and swaddled, the baby is laid in the cradle, which is lined with soft blankets. A thin pillow protects his head from the wood. There may be some variation on this point, as to how thin and how soft the pillow is. Once on his back, the baby is bound to the cradle-board at the shoulders and also lower down. This keeps him from moving about, and his shoulders stay flat. He can move his head about as much as this position will allow. Although the head is not bound, its easiest position in rest is squarely on the occipital bone.

The child rides and nurses and sleeps in this cradle most of the time until he is taken out for good, which is said to vary between 6 months and a year, or even longer. During this period it is changed from swaddling

[3] Dingwall, 1931.
[4] Hasluck, 1947, pp. 130-31.

854 clothes to garments which permit freer movements. When the time for uncradling draws near, the mother takes the child out now and then to see if it can sit up; when it is able to sit by itself on a blanket while she works, she may remove it from the cradle altogether.

Armenian as well as Albanian informants tell me that 2 factors govern the age at which the child is uncradled: its "strength," or ability to "sit up without falling down," and the [304] preference of the parents. A "strong" baby, therefore, would be released earlier in life than a "weak" baby, and a difference between a year's cradling and 6 months' might make all the difference between no visible flattening and an extreme case. One is also tempted to postulate that a "strong" baby's bones would resist deformation more than those of a "weak" baby, particularly if weakness were a reflection of nutrition in a hungry land, as in many parts of the Gheg mountains. When parental choice is added, we find reasons enough to explain variations in the frequency of flattening.

Thanks to the generosity of Mr. Dmitri Peterson of Somerville, Massachusetts, we have a scale model of such a cradle to study first hand. Mr. Peterson was taught the trade of carpenter in Albania as a young man, and has made many such cradles. Although his home was in southern Albania, my photographs and memory of Gheg cradles showed them to be much the same. The cradle made by Mr. Peterson consists essentially of 2 boards, a backboard on which the baby lies, and a headboard shielding the top of his head. Other boards form the sides. A footboard, which is the same piece of wood as the front rocker, has been cut crescent-wise to let the baby's feet through. He could, however, brace against it with his feet if he tried.

The cradle depicted in figure 11, *a*,[1] on the other hand, has a sling of yarn for the head to rest on, and only a low headboard. The footboard is low, but straight. This cradle was photographed in Zadrima. Baron Nopcsa[2] illustrates another cradle from "Planti (Gebiet von Pulti)," which I presume is in Malsia e Madhe (fig. 11, *d*).[1] It had a headboard and a

1 [See p. 111 - Area 7]
2 [See p. 111 - Area 7]
[2] Nopcsa, 1925, p. 109.

8:Coon E-5 (1929-30;46-48)19-.. EG1 Albania EG1
Highland Gheg

854 curved footboard, like Mr. Peterson's. In Haberlandt's work[6] 2 are shown, both of the Peterson variety. One was from Scutari (fig. 11, *b*), the other belonged to Vlachs in central Albania (fig. 11, *c*).

854 Were one to make a detailed study of cradle
304 types in the Gheg mountains, tribe by tribe and village by village, one would probably find variations both in form and in use which might further help explain local differences in head form. It may for example be no coincidence that the Zadrima cradle has no headboard, while the Zadrima sample is high in occipital and very low in lambdoid flattening. It is not inconceivable that a baby who had outgrown his cradle and who had learned to brace his feet on the footboard might push his head against the headboard if there were one, and give himself lambdoid flattening. On the other hand, a slanting pillow might have the same effect.

Sometimes one finds both kinds on the same head; presumably the child was occipitally flattened first, then, as he outgrew his cradle, lambdoid flattening appeared. If during the process of flattening the smooth union of the parietals and the occipital bone were impeded, and an irregular bone growth resulted, the anomaly called bathrocephaly would be added. It is possible that, in some cases, bathrocephaly might be the only discernible after-effect of cradling; that the bones would spring rather than flatten. What is badly needed is some experimental work on this subject; until that is done it must remain partly speculative, since these types of deformation also occur on heads which have not been cradled, in lower frequencies and in less extreme degree.

THE RELATIONSHIP BETWEEN TYPES OF DEFORMATION

304 On figure 7 the frequencies and percentages
*128 of the various categories of occipital flattening, lambdoid flattening, and bathrocephaly have been given. Table 23 shows how these 3 phenomena are related. Less than a third (31.40%) of the men had unflattened heads, and 27 per cent also lacked bathrocephaly.

[6] Haberlandt, 1917, p. 11, table III, no. 12, and p. 95, fig. 29.

1 [See cat. #6, p. 111 -- Analyst]
2 [See cat. #6, p. 111 -- Analyst]
3 [See cat. #6, p. 92b -- Analyst]
4 [See cat. #6, p. 93d -- Analyst]

8:Coon E-5 (1929-30;46-48)19[illegible] EG1 Albania EG1
Highland Ghegs

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These 27 per cent were undoubtedly cradled like the others; perhaps they were "strong" babies and released early; perhaps they had softer pillows than the others. What caused this difference in each case we do not know.

Of the two-thirds of the men who remain, those who have one kind of flattening seldom have the other. The fourfold table at the bottom of table 23 yields a coefficient of association of − .69, which is strongly negative.[7] The 68 men, or 6 per cent of the series, who

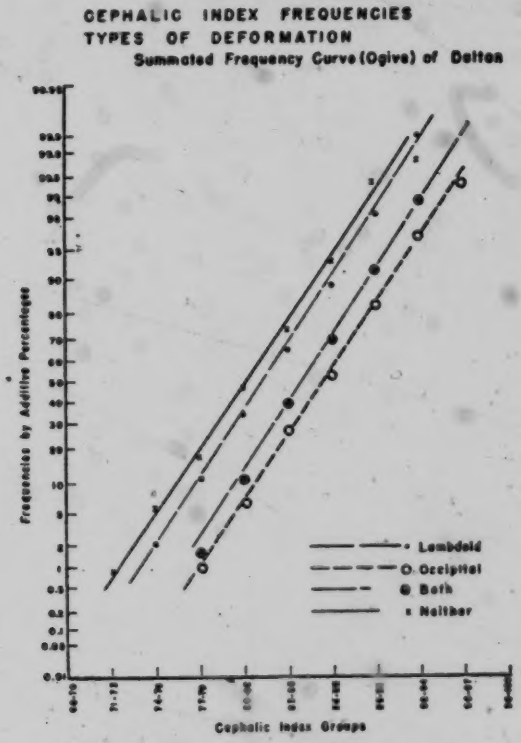

FIG. 7. Cephalic index frequencies.

have both, fail to reach the +++ category in either plane.

Bathrocephaly is closely linked to lambdoid flattening, to the extent of a + .84 coefficient of association, so closely that in the rest of this chapter we can, for practical purposes, ignore it. We can afford to do so, however, only

[7] Yule's formula. $Q=\frac{ad-bc}{ad+bc}$; Arkin and Colton, 1947, p. 100.

-92b-

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+128 after considering the 49 men who had bathrocephaly without any flattening at all. These 49 men have a mean cephalic index of 82.41 ± .35, nearly the same as the total of 286 men who had no flattening, 82.97 ± .15. It seems fully justifiable to consider them in the latter category.

8:Coon E-5 (1929-30;46-48)1956 EG1 Albania EG1
Highland Ghegs

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THE EVIDENCE OF BROTHERS

In our series it was possible to identify 13 pairs of brothers and 4 sets of 3. Their positions in respect to presence or absence of the 2 kinds of cranial flattening are shown on table 24.

This table is difficult to interpret, largely because the numbers of individuals are so small. In the pairs of brothers, there seems to be a tendency for both or neither to have flattened skulls, regardless of the type of flattening. In the sets of 3, the numbers are too small to tell anything of consequence except that the same mother may bear sons who differ. In the upper right corner of the table the numbers in parentheses represent the numbers expected in each of the 4 classes if the group of 17 families were a random sample of the whole series. If we combine "lambdoid only" and "occipital only" we see that this is the

*P=present.
†A=absent.

[see cat, 116, p. 93e -- Analyst]

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#128

case. The evidence of brothers is included here merely to show that neither genetics nor family cradling habits can be shown to govern the presence or absence of the 2 types of flattening. Unless we leave it entirely to chance, the theory of the "strong" child seems most likely.

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x128

TABLE 23: TYPES OF FLATTENING.

OCCIPITAL FLATTENING

LAMBDOID FLATTENING	ABS.	sm	+	++	+++	TOTAL
Abs.	335	22	164	66	10	597
sm	98	8	4	—	—	110
+	275	7	41	2	—	327
++	27	—	2	2	—	31
+++	2	—	—	—	—	2
Total	737	37	213	70	10	1067

COMBINATIONS OF FLATTENING			BATHROCEPHALY AND FLATTENING: BATHROCEPHALY ABSENT		BATHROCEPHALY PRESENT		
	No.	%	No.	%	No.	%	TOTAL
No flattening	335	31.40	286	85.37	49	14.63	100.00
Occipital only	262	24.56	254	97.21	7	2.79	100.00
Lambdoid only	402	37.66	183	45.52	218	54.48	100.00
Both	68	6.38	34	50.00	34	50.00	100.00
Total	1067	100.00	757		308		

	OCCIPITAL: ABS.	PRES.
LAMBDOID ABS.	335	262
LAMBDOID PRES.	402	68

Q = -.59

	BATHROCEPHALY: ABS.	PRES.
LAMBDOID ABS.	540	56
LAMBDOID PRES.	217	252

Q = +.84

8:Coon E-5 (1929-30;46-48)19 EG1 Albania EG1
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Table 24: Head Flattening Among Brothers.

	Pairs of Brothers	
	Occip.	Lambd.
Both brothers.....	4	2
Older only	1	3
Younger only.....	3	2
Neither	5	6
	13	13 pair

Combinations Within Families
Both Pairs & Sets of Three

Both types	5	(5)
Occipital only	7	(4)
Lambdoid only	3	(6)
Neither	2	(2)

Four Sets of Three Brothers

	Occipital			Lambdoid		
Birth Order	1	2	3	1	2	3
#1	P*	A†	P	A	A	A
#2	A	A	A	P	P	A
#3	P	A	P	A	P	A
#4	P	A	A	A	A	A

8:Coon E-5 (1929-30;46-48)1960 EG1 Albania EG1
Highland Ghegs

HANDEDNESS, ASYMMETRY, AND FLATTENING

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In table 4 we saw that over a third of our series had asymmetrical heads; that is a high ratio. Facial asymmetry, on the other hand, was negligible. With an abnormal amount of cranial asymmetry, and the indication that much if not all of the flattening might also be abnormal, it seems worth while to explore the possibility that these 2 features are associated. First, however, it must be explained how we judged which side the asymmetry was on. An asymmetrical skull bulges to one side or the other. When a skull bulged to the left, we called it left cranial asymmetry, and the converse. When the skull was both asymmetrical and flattened, the plane of flattening pointed to the opposite side from that designated.

TABLE 25: HANDEDNESS, ASYMMETRY, AND FLATTENING.

OCCIPITAL

ASYMMETRY	ABS.	PRES.
ABS.	549	188
PRES.	131	199

Q = +.63

LAMBDOID

ASYMMETRY	ABS.	PRES.
ABS.	387	210
PRES.	293	177

Q = +.06

OCCIPITAL FLATTENING ABSENT

CRANIAL ASYMMETRY	HANDEDNESS L	HANDEDNESS R
L	7	47
R	5	127

Q = +.58

OCCIPITAL FLATTENING PRESENT

	HANDEDNESS L	HANDEDNESS R
L	12	45
R	2	138

Q = +.89

Table 25 shows a definite tendency for men with occipital flattening to have cranial asymmetry as well; a little more than half the occipitally flattened heads are also asymmetrical. Men with lambdoid flattening may or may not have cranial asymmetry; in their case the association is a chance one. This seems

1 [See cat. 116, p. 54m --Analys
2 [See cat 116, p. 94a --Analys

8:Coon E-5 (1929-30;46-48)198 EG1 Albania EG1
Highland Ghegs
Tosks

304 145 #128 logical enough if flattening is caused by cradling. A baby lying on his back must strain to turn to one side, and if he habitually chose the same side, that side might be expected to bear the bulk of the flattening. On the other hand if the top of his head were pressed against the headboard, which side he turned to would make little difference.

The way to test this second theory is to see whether or not occipital flattening and handedness are associated. The frequencies for handedness are given on table 4.[1] We tested for handedness by seeing which hand the man put out to take the dynamometer, and if he seemed to hesitate, by asking him to throw a stone. A total figure of 7 per cent for left handedness seems reasonable for a country where almost no one is literate, and where the only compunctions about which hand to use lie in the field of eating and its ultimate result.

Table 25[2] also shows that handedness is associated with cranial asymmetry in any case; in the men who were not occipitally flattened, it reached a Q of + .58, but in those who were so flattened, it attained the nearly complete association of + .89. What this seems to mean is that the babies who were right handed had a tendency to roll over on the left to free their right arms, and to look with their right eyes, etc., while the babies who were left handed had a tendency to do the opposite. It would be very strange if these movements would distort the skull, or be associated with such distortion, without benefit of cradle.

THE BOSTON EVIDENCE

167 The best kind of evidence, of course, is experimental. Although it was impossible to experiment with the Ghegs, a full-dress experiment of exactly the kind we need was conducted unwittingly for us by a group of several thousand Tosks. Shortly before World War I a whole village, Katundi, pulled up stakes and moved to America. Most of them settled in the neighborhood of Boston, where they were joined by others from neighboring villages. The anthropological problems presented by this migration have yet to be studied as a whole, and their investigation should yield much profit in years to come. For the moment a slight beginning may be made, which will serve the purposes of the present report.

1 [see cat. #6, p. 54m --analyst]

2 [see cat. #6, p. 94a --analyst]

8:Coon E-5 (1929-30;46-48)195- EG1 Albania EG1
Highland Ghegs
Tosks

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During the winter of 1946–47, 2 graduate students in the Harvard Department of Anthropology, despite busy programs, undertook to measure and observe a sample of the colony, including both Albanian-born and American-born (fig. 16)[1] cradled and uncradled. They measured 37 adults of both sexes who had been born in Albania, and cradled, and 30 individuals, also of both sexes, born in America, of whom only 12 were 20 years old or over.

Table 26[2] gives the results in the categories of occipital and lambdoid flattening. Only one person born in Albania lacked any kind of flattening; he is Mr. Peter Peterson, whose picture may be seen on plate 14, fig. 3, of "The

[1] [See cat. 116, p. 116 -- Analyst]

[2] [See cat. 116, p. 95c -- Analyst]

8:Coon E-8 (1929-30;46-48)1956 EG1 Albania EG1
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Races of Europe." With a cephalic index of 91.5, he is a living argument that cradling may in some cases raise the cephalic index without producing flattening; persons with this index who were not cradled are exceedingly rare.

Nearly three-fourths had occipital flattening, while two-thirds had lambdoid as well. Of the 46 per cent with both, many had pronounced flattening in 2 planes, separated by an angle. Three were flattened at such an angle that it was necessary to decide arbitrarily between the 2 categories. On the blank used no place had been assigned for +++, or it would have been used. Although no sex difference appears in presence or absence of flattening, in both occipital and lambdoid flatten-

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TABLE 26: TYPE OF FLATTENING.

BIRTHPLACE	ALBANIA		AMERICA		AGES		
	#	%	#	%	5-14	15-19	20
No flattening.....	1	2.70	4	13.33	0	2	2
Occipital only.....	11	29.73	4	13.33	2	0	2
Lambdoid only.....	8	21.62	20	66.67	8	5	7
Both	17	45.95	2	6.67	1	0	1
Totals	37		30		11	7	12

DEGREE OF FLATTENING

	OCCIPITAL				LAMBDOID			
	ALBANIA		AMERICA		ALBANIA		AMERICA	
	#	%	#	%	#	%	#	%
Abs.	9	24.32	24	80.00	12	32.43	8	26.67
sm	1	2.70	3	10.00	10	27.03	12	40.00
	17	45.95	1	3.33	7	18.92	8	26.67
	10	27.03	2	6.67	8	21.62	2	6.67
	37		30		37		30	

SEX DIFFERENCES

ALBANIAN-BORN				AMERICAN-BORN			
FLATTENING	MALE	FEMALE		FLATTENING	MALE	FEMALE	
ABS.	1	0		ABS.	2	2	
PRES.	21	15		PRES.	14	12	

SEX DIFFERENCES

	ALBANIAN-BORN					AMERICAN-BORN				
	OCCIPITAL		LAMBDOID			OCCIPITAL		LAMBDOID		
	♂	♀	♂	♀		♂	♀	♂	♀	
Abs.	4	5	6	6	Abs.	12	12	3	5	
sm	1	0	4	6	sm	3	0	6	6	
	8	9	6	1		0	1	5	3	
	9	1	6	2		1	1	2	0	
Total	22	15	22	15	Total	16	14	15	14	

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ing, the men showed much more marked degrees than the women. It would be hard to find anywhere a more flattened group. These Tosks are much more flattened than the Ghegs of our series; only the tribesmen of Zadrima and Malsia e Madhe approach them. The Tosks, however, characteristically have both lambdoid and occipital types at once while among the Ghegs a combination of the two is rare. The Tosks are also stockier, heavier, hairier men than the Ghegs, and more frequently bald. Racially they appear to be typically Alpine, whereas the Ghegs are more typically Dinaric, in the classic sense.

The children of these people, born in America and treated in infancy in exactly the same fashion as other American children, differ from their parents, as might be expected. Four out of 5 had some lambdoid flattening, while only one out of 5 had the occipital variety. In the frequencies of degree of occipital flattening a regular descending progression is seen from absent to *sm* to + to ++, which is what one would expect for the incidence of a minority character were it acquired through the same agency as its absence. This is the opposite situation from that seen among the Ghegs and the Albanian-born Tosks. The degrees of lambdoid flattening also assume a normal distribution, with the peak at *sm*. Two uncradled males with lambdoid flattening also had bathrocephaly. Small as this series is, it is highly suggestive.

Flattening of both varieties appears in early childhood, and probably in infancy, among the American-born. It seems not to increase with age. Lambdoid flattening is just as frequent among the uncradled as among the cradled, but among the latter it is much more marked. From this evidence one can only conclude that when it appears as a small area of flattening only it is probably genetic, but that when cradling is added the area increases. Occipital flattening is found among only 6 out of 30 of the uncradled. Three of these 6 were traces to slight. Of the other 3, one with + was an 11-year-old girl; the other 2 had ++. Of these, one is a younger brother of Mr. Peter Peterson, aged 24. There can be no question whatever in his case. He was not cradled. The other is a 33-year-old woman born in Maine. In her case we are not as sure. Occip-

8:Coon E-5 (1929-30;48-48)1950 EG1 Albania EG1
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ital flattening is probably also genetic at times, or produced by other environmental influences of which we are not aware. When it occurs with the frequency and to the degree shown by the cradled Tosks, we may be reasonably sure that the cradling is responsible for most, but not necessarily all, of it. The Boston Tosk population urgently needs a thorough study, while the old people who led the colony across the ocean are still with us, and before the young people are dispersed.

THE ANTHROPOMETRY OF FLATTENING

Returning to our Gheg series, we may survey the effect of both kinds of flattening on the major dimensions of the head, and on the cephalic index, as shown in table 27 and figure 7.[1] Constants were also seriated for stature, minimum frontal, bizygomatic, bigonial, total face height, upper face height, nose height, nose breadth, and the nasal index. Since all of these drew complete blanks except bizygomatic, we may conclude with confidence that within present limits cranial vault form has nothing whatever to do with any of them except the width of the face, either genetically or mechanically. Furthermore, the failure of such sensitive criteria as face height and nose height to change with type of flattening confirms the independence of these latter from the influences of age, once the sutures have entirely closed.

The dimensions of the vault sort themselves out into 2 categories; those that are nearly identical with each other and those that approach or attain statistical significance. In head length, *lambdoid* and *both* are the same; in the breadth, *lambdoid* and *neither*. In the height, *occipital* and *both* are the same; in the cephalic index all are different.

It is interesting to observe that lambdoid flattening, despite its position, still causes a little shortening of the head, and that the men with both types of flattening follow those with lambdoid only in this dimension. In breadth, however, the lambdoidally flattened heads follow the unflattened, while the men with both take their breadth from their occipital flattening. As one would expect, lambdoid flattening carries with it the lowest values for

[1] [see cat. 114, p. 97e -- Analyst]

[2] [see cat. 114, p. 92b -- Analyst]

8:Coon E-5 (1929-30;46-48)1950 EG1 Albania EG1
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head height and occipital the highest. The men with *both* follow the occipital line, while those with *neither* are between. Whatever else a man may have, lambdoid flattening prevents his head from being shortened beyond a certain degree; if he has occipital flattening he is sure to have a broad and high vault. As one

1411 would expect, the values for the cephalic
● 304 index follow a progression from *neither* to
#128 *occipital*, and a range of 5 index points. Clearly, flattening is a vital factor in the makeup of Dinarics.

In the means for the bizygomatic diameter, significant differences are seen between *lambdoid* and *both*, *occipital* and *both*, and *neither* and *both*. Lambdoid flattening does not broaden the face but apparently occipital does. The reason why *both* exceeds *occipital* only is that *both* has higher values for degree of occipital flattening than *occipital only*.

141 This increase in face breadth, though sig-
304 nificant, is not great. Another element in this
#128 complex is the nasal profile, which seems to grow more convex as the occiput becomes more flattened. The significance of this, if any, may be seen more in the steady progression of percentages of convex in the column repre-

8:Coon E-5 (1929-30;46-48)19?? EG1 Albania EG1
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senting degree of occipital flattening than in any statistical test. It may be added that many other attributes were tested for association with head form, and none of them were found to be related. Lambdoid flattening does nothing to the face. Occipital flattening may bring about a slight facial broadening in connection with the greater broadening of the parietals, for as it separates the areas of attachment of the temporal muscles, it may, in so doing, thus spread the hoops under which these muscles pass to the mandibular condyles, which remain constant. The increase in nasal

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Table 27: Anthropometry and Flattening.

Vault Dimensions

	Only Occipital	Only Lambdoid	Both	Neither
No.	262	402	68	335
Head lgth.	181.70 ± .27	186.73 ± .23	186.71 ± .95	188.36 ± .25
Head br.	161.50 ± .23	156.93 ± .19	160.10 ± .44	156.10 ± .21
Head ht.	129.44 ± .33	126.88 ± .26	129.76 ± .73	128.23 ± .23
Cephalic index	87.91 ± .16	84.08 ± .12	86.82 ± .67	82.96 ± .23
Bizygomatic	142.60 ± .25	141.79 ± .19	144.78 ± .46	142.06 ± .21

Degree of Flattening and Cephalic Index

		Occipital*		Lambdoid*
Abs.	737	83.56	597	85.18
sm	37	85.86	110	83.93
+	213	87.31	327	84.31
++	70	89.06	33	87.09
+++	10	92.10		
Total	1067		1067	

* Including both.

Nasal Profile and Flattening

	Concave		Straight		Convex		Conc.-Conv.		Total
	#	%	#	%	#	%	#	%	
Abs.	54	7.30	300	40.70	374	50.75	9	1.25	737
sm	3	8.11	15	40.54	18	48.65	1	2.70	37
+	7	3.37	80	37.47	125	58.69	1	.47	213
++	5	7.14	18	25.71	47	67.14	0	0	70
+++	0	0	3	30.00	7	70.00	0	0	10
Total	69		416		571		11		1067

	Convexity	
Occip. Flattening	Absence	Presence
Abs.	363	374
Pres.	133	197

Q = .45

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convexity would reflect a thrusting forward, in extreme cases, of the bony structures in the sagittal line of the cranium through the region of the nasal passages.

Before this section is concluded, it might be of interest to mention that the 22 adult male Tosks measured in Boston have a mean cephalic index of 89.91, with a mode of 8 individuals at 91. The distribution is not a curve at all.

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The 5 adult males born in America have cephalic indices of 76, 78, 78, 87, and 88, with a mean of 81; 3 out of 5 are as long headed as the rest of the American population, while the other 2 approximate the mean and mode of their cradled parents.

TRIBAL DISTRIBUTION OF HEAD FORM

Table 28[1] shows clearly that it is not merely

[1] [see cat. No. P. 98e-- Analyst]

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the relative frequency of occipital and lambdoid flattening that causes regional differences in head form (figs. 7, 14, 15).[1] When the unflattened individuals in each tribal series are sorted out and reseriated, we find that in each case a lower mean is obtained than before, varying from .74 points lower in the case of Dukagin, to 2.98 points lower in Has. The complete regularity of this column provides

1 [see cat. 116, pp. 92 b, 114, 115--Analyst]

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for its validation. If flattening alone were responsible for the differences in cephalic index, then when all flattened persons were removed the tribal means should be identical. They are not, and we have uncovered a real, probably genetic, difference in head form ranging from a mean of 84 in the west to 81 in the east. This accords perfectly with the regional distribution of facial measurements which we have already seen.

8:Coon E-5 (1929-30;46-48)195. EG1 Albania EG1
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TABLE 28: TRIBAL CEPHALIC AND INDEX MEANS.

	TOTAL AND UNFLATTENED			
	No.	TOTAL	No.	UNFLATTENED
MeM	105	86.79 ± .25	22	84.28 ± .46
Duk	106	84.54 ± .24	30	83.80 ± .33
MeJ	104	83.04 ± .28	41	81.22 ± .40
Has	114	85.59 ± .28	26	82.61 ± .59
Lum	109	82.62 ± .27	32	81.38 ± .40
Puk	102	83.76 ± .26	55	82.69 ± .27
Mir	101	84.39 ± .27	33	83.09 ± .42
Zad	105	86.67 ± .24	35	84.86 ± .38
Mat	104	86.49 ± .27	22	84.14 ± .54
Dib	108	84.96 ± .26	32	83.34 ± .49